CLAIMS

What is claimed is:

1. A transceiver for use in connecting a host with an optical network, the transceiver comprising:

an input port that receives electrical signals from a host, the input port being in communication with an optical transmitter for generating an optical signal for transmission to the optical network;

an output port that sends electrical signals to the host, the output port being in communication with an optical receiver that receives optical signals from the optical network and converts the optical signals into electrical signals; and

a loopback path for selectively coupling an incoming electrical signal from the input port to the output port.

2. The transceiver of claim 1, further comprising an integrated chip comprising a post amplifier and a laser driver, wherein the loopback path comprises a conductive path on the integrated chip.

3. The transceiver of claim 2, wherein the loopback path passes through at least one of the post amplifier and the laser driver.

4. The transceiver of claim 2, wherein the loopback path does not pass-through the post amplifier or the laser driver.

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5. The transceiver of claim 2, wherein the integrated chip further comprises a receiver eye opener and a transmitter eye opener.

6. The transceiver of claim 5, wherein the loopback path passes through at least one of the receiver eye opener and the transmitter eye opener.

7. The transceiver of claim 5, wherein the loopback path does not pass-through the receiver eye opener or the transmitter eye opener.

8. The transceiver of claim 5, wherein:

the receiver eye opener comprises at least one of a clock and data recovery, an RT, and a buffer;

the transmitter eye opener comprises at least one of a clock and data recovery, an RT, and a buffer; and

the loopback path passes through at least one of the at least one of a clock and data recovery, an RT, and a buffer on the receiver eye opener and the at least one of a clock and data recovery, an RT, and a buffer on the transmitter eye opener.

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9. The transceiver of claim 8, further comprising multiple loopback paths such that a network administrator can selectively route the electrical signal through one or more of the at least one of a clock and data recovery, an RT, and a buffer on the receiver eye opener and the at least one of a clock and data recovery, an RT, and a buffer on the transmitter eye opener in order to evaluate different components on the transceiver.

10. The transceiver of claim 1, wherein the transceiver can be remotely controlled to place the transceiver in one of:

a normal mode such that incoming electrical signals are routed from the input port to an optical transmitter which generates an optical output in response to the electrical input signal;

a loopback mode such that incoming electrical signals bypass the optical transmitter and are routed to the output port; and

a pass-through mode such that incoming electrical signals are selectively coupled from the input port to a pass-through port.

11. The transceiver of claim 1, wherein the loopback path is configured for diagnosing the operation of a host, the transceiver, and optical devices interconnecting the host and the transceiver.

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12. A transceiver for use in connecting an optical network to a host, the transceiver comprising:

an optical transmitter generating an optical output in response to an electrical input signal applied to an input of the optical transmitter;

an optical receiver generating an electrical output signal at a receiver output in response to an optical input; and

a loopback path for selectively coupling the electrical output signal from the optical receiver to the input of the optical transmitter.

13. The transceiver of claim 12, wherein the loopback path is configured for bypassing a transceiver output port and coupling the electrical output signal to the input of the optical transmitter.

14. The transceiver of claim 12, wherein the loopback path is configured for diagnosing the operation of a remote host, the transceiver, and optical devices interconnecting the remote host and the transceiver.

15. The transceiver of claim 12, further comprising an integrated chip comprising a post amplifier and a laser driver, wherein the loopback path comprises a conductive path on the integrated chip.

16. The transceiver of claim 15, wherein the loopback path passes through at least one of the post amplifier and the laser driver.

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17. The transceiver of claim 15, wherein the integrated chip further comprises a receiver eye opener and a transmitter eye opener.

18. The transceiver of claim 17, wherein the loopback path passes through at least one of the receiver eye opener and the transmitter eye opener.

19. The transceiver of claim 17, wherein the loopback path does not pass-through the receiver eye opener or the transmitter eye opener.

20. The transceiver of claim 17, wherein:

the receiver eye opener comprises at least one of a clock and data recovery, an RT, and a buffer;

the transmitter eye opener comprises at least one of a clock and data recovery, an RT, and a buffer; and

the loopback path passes through at least one of the at least one of a clock and data recovery, an RT, and a buffer on the receiver eye opener and the at least one of a clock and data recovery, an RT, and a buffer on the transmitter eye opener.

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21. The transceiver of claim 20, further comprising multiple loopback paths such that a network administrator can selectively route the electrical output signal through one or more of the at least one of a clock and data recovery, an RT, and a buffer on the receiver eye opener and the at least one of a clock and data recovery, an RT, and a buffer on the transmitter eye opener in order to evaluate different components on the transceiver.

22. The transceiver of claim 12, wherein the transceiver can be remotely controlled to place the transceiver in one of:

a normal mode such that an electrical output signal is routed from the optical receiver to a transceiver output port;

a loopback mode such an electrical output signal is routed from the optical receiver to the optical transmitter; and

a pass-through mode such that an electrical output signal is selectively coupled from the optical receiver to a pass-through port.

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23. A transceiver for use in connecting a host with an optical network, comprising:

an input port for receiving an electrical input signal from a host;

an optical transmitter generating an optical output in response to the electrical input signal applied to a transmitter input;

an optical receiver generating an electrical output signal at a receiver output in response to an optical input;

an output port for relaying the electrical output signal to the host;

a first loopback path for selectively coupling the electrical input signal from the input port to the output port; and

a second loopback path for selectively coupling the electrical output signal from the optical receiver to the optical transmitter.

24. The transceiver of claim 23, wherein the first loopback path is configured for bypassing the optical transmitter and directing the electrical input signal to the output port and the second loopback path is configured for bypassing the output port and directing the electrical output signal to the optical transmitter.

25. The transceiver of claim 23, further comprising an integrated chip comprising a post amplifier and a laser driver, wherein the first and second loopback paths comprise conductive paths on the integrated chip.

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26. The transceiver of claim 23, further comprising:

a pass-through port; and

at least one of:

a first pass-through path for selectively coupling the electrical input signal from the input port to the pass-through port in a pass-through mode; and

a second pass-through path for selectively coupling the electrical output signal from the optical receiver to the pass-through port in a pass-through mode

27. The transceiver of claim 26, further comprising multiple loopback paths such that a network administrator can selectively route the electrical output signal or the electrical input signal through one or more of the at least one of a clock and data recovery, an RT, and a buffer on the receiver eye opener and the at least one of a clock and data recovery, an RT, and a buffer on the transmitter eye opener in order to evaluate different components on the transceiver.

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28. The transceiver of claim 23, wherein the transceiver can be remotely controlled to place the transceiver in one of

a normal mode such that an electrical output signal is routed from the optical receiver to a transceiver output port and an electrical input signal is routed from the input port to the optical transmitter;

a loopback mode such that an electrical output signal is routed from the optical receiver to the optical transmitter and/or an electrical input signal is routed from the input port to the output port; and

a pass-through mode such that an electrical output signal is selectively coupled from the optical receiver to a pass-through port and/or an incoming electrical signal is selectively coupled from the input port to a pass-through port.

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29. A transceiver, comprising:

an optical transmitter capable of generating an optical output in response to an electrical input signal applied to a transmitter input;

an optical receiver capable of generating an electrical output signal at a receiver output in response to an optical input;

a transceiver input port for receiving an electrical input signal;

a transceiver output port for receiving the electrical output signal and communicating the electrical output signal to a host system;

a pass-through port; and

a pass-through path for selectively coupling the electrical input signal from the input port to the pass-through port in a pass-through mode.

30. The transceiver of claim 29, wherein the transceiver can be remotely controlled to place the transceiver in one of:

a normal mode such that incoming electrical signals are routed from the input port to the optical transmitter for transmission to a remote host as an optical output;

a loopback mode such that an electrical input signal is routed from the input port to the output port; and

a pass-through mode such the electrical input signal bypasses the optical transmitter and is routed to the pass-through port.

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31. A transceiver, comprising:

an optical transmitter generating an optical output in response to an electrical input signal applied to a transmitter input;

an optical receiver generating an electrical output signal at a receiver output in response to an optical input;

an input port;

an output port for receiving the electrical output signal and communicating the electrical output signal to a host system;

a pass-through port; and

a pass-through path for selectively coupling the electrical output signal from the optical receiver to the pass-through port in a pass-through mode.

32. The transceiver of claim 31, wherein the transceiver can be remotely controlled to place the transceiver in one of:

a normal mode such that the electrical output signal is routed from the optical receiver to the output port for transmission to a host;

a loopback mode such an electrical output signal is routed from the optical receiver to the optical transmitter; and

a pass-through mode such that the electrical output signal is selectively coupled from the optical receiver to the pass-through port.

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33. A method for remotely diagnosing the operation of devices in an optical network, the method comprising:

in an optical device that, in normal operation, communicates a data signal from an input to a first output, receiving a control signal at the optical device;

placing the optical device in a signal rerouting mode in response to the control signal; and

selecting a signal path on the optical device whereby the data signal is routed from the input to a second output.

34. The method of claim 33, wherein the selected signal path is selected from the group consisting of:

a loopback path wherein the second output returns the data signal to its source; and

a pass-through path wherein the second output comprises a pass-through port that directs the data signal to another optical device.

35. The method of claim 33, wherein the optical device comprises an optical transceiver, the input comprises an electrical input port, the first output comprises an optical transmitter, and the second output comprises an electrical output port.

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36. The method of claim 33, wherein the optical device comprises an optical transceiver, the input comprises an optical receiver, the first output comprises an electrical output port, and the second output comprises an optical transmitter.

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